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TWO NEW SPECIES OF *TENTHREDO* (HYMENOPTERA, TENTHREDINIDAE) FROM CHINA WITH A KEY TO *SUBFLAVA* SPECIES GROUP

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Abstract *Tenthredo latidentella* Wei *et* Zhao, sp. nov. and *T. flatosutellenia* Wei *et* Niu, sp. nov. are described and figured from China. The species belong to *subflava* species group. A key to species of *subflava* species group is provided. The type specimens of the new species are kept in the Insect Collection of Central South University of Forestry and Technology, Changsha, Hunan Province, China (CSCS).

Key words Hymenoptera, Tenthredinidae, Tenthredo, new species, China

Tenthredo L. *s. str.* (excluding *Jermakia* Jakovlev, *Propodea* Malaise, *Metallopeus* Malaise, *Peus* Konow, *Caspipteryx* Taeger and *Adungia* Malaise) is the largest genus of Tenthredinidae including more than 1 000 valid species. It is a Holarctic genus and the eastern Asia is the main distribution area, where about 600 species have been recorded untill 2008. Among them, 292 species have been recorded in China at the end of 2009 (Wei, 2006; Wei *et al*, 2006; Wei & Nie, 2006; Wei & Niu, 2009; Niu & Wei, 2008; Yan *et al*, 2008; Haris, 2009).

In this paper, two new species of *Tenthredo subflava* group are described from China. The type specimens of the new species are kept in the Insect Collection of Central South University of Forestry and Technology, Changsha, Hunan Province, China (CSCS).

The known species of *Tenthredo subflava* group share the following characters: 1) body medium sized, not robust and not slender; 2) body green with a few black maculae on head, thorax or abdomen, the black spots on head and thorax large, not linear; 3) body strongly shining without distinct punctures, rarely with some shallow punctures or microsculptures; 4) clypeus usually broadly and shallowly incised; 5) occipital carina complete, the lower end of hind orbit not distinctly bulged; 6) postocellar area broader than long; 7) antenna slender, black, scape or the ventral side of some flagellomeres sometimes green, with the 3rd antennomere longer than the 4th; 8) mesoscutellum usually without sharp peak or carina; 9) mesosternal thorn absent; 10) the pulvilli of hind tarsus distinctly smaller than those of fore and middle tarsus.

Tenthredo latidentella **Wei** et **Zhao, sp. nov.** (Figs 1-8)

♀. Body length 10-11 mm (Fig. 1). Body and legs green, apex of mandible dark reddish; following parts black: bottom of middle fovea, ocellar area, anterior half to 2/3 of postocellar area, scape and pedicellum entirely (Fig. 2), dorsal side of flagellum, anterior corner of propleuron, a posteriorly bifurcate elliptical macula on prescutum, one large and one small macula on scutum, lateral half of parapsis, meso-postnotum largely, apical margin of sheath, basal spot on posterior side of hind coxa, a narrow dorsal stripe on apical half to 2/3 of each femur, a long stripe on dorsal side of fore and middle tibiae, a short stripe on basal part of hind tibia, a stripe on dorsal side of each tarsus. Wings hyaline, stigma, vein C and Sc green, other veins mostly black. Body hairs and setae on sheath silver brown.

Body shining; head dorsally impunctate, orbits and temple with fine microsculptures; malar space densely sculptured; clypeus polished, strongly shining; labrum shallowly and very weakly punctured and microsculptured; pronotum strongly shining; prescutum and scutum with some shallow punctures and fine microsculptures; mesoscutellum strongly shining, posterior slope with some shallow punctures; parapsis, posttergite, metanotum, mesopleuron and metapleuron polished, without puncture and microsculpture, strongly shining; abdominal tergites finely microsculptured.

Labrum transverse, broader than long, apical margin obtusely round; clypeus broad and flat, broadly and roundly emarginated to a depth about 1/3 length of clypeus, apex of lateral lobe round; malar space about 1.5 times diameter of an ocellus; eyes large, distance between eyes below shorter than height

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Figs 1-8. *Tenthredo latidentella* Wei *et* Zhao, sp. nov. 1. Adult female, dorsal view. 2. Female head, dorsal view. 3. Hind claw of female. 4. Apical segments of abdomen and ovipositor of female, lateral view. 5. The 7^{h} serrula of female lancet. 6. Harpe. 7. Adult male, dorsal view. 8. Penis valve.

of an eye; supraantennal tubercles distinctly elevated but evenly merging to frontal walls; middle fovea open to frontal basin; middle ocellar furrow and postocellar furrow sharp; postocellar area flat, broader than long as 17∶15; lateral furrows deep, slightly curved, feebly divergent backwards; head behind eyes in dorsal view much shorter than eyes as 4∶7, lateral margins distinctly narrowed; occipital carina complete; posterior margin of postocellar area sharply carinate. Antenna filiform, shorter than abdomen, slightly longer than head and thorax together; pedicellum twice as long as broad; 3rd antennomere distinctly longer than 4th antennomere (18∶13), penult antennomere more than twice as long as broad. Mesoscutellum very flat, without peak or carina; mesepisternum flat, hardly elevated at middle; mesosternal thorn absent. Vein cu-a in forewing joining cell 1M at basal 1/3; vein a at basal 2/5 of anal cell; 2rm meeting cell 2Rs at apical 1/3; cell 2Rs longer than 1Rs; vein 2r-m 2.2 times as long as 1r-m, hind anal cell sessile. Inner tibial spur of hind leg longer than half length of hind basitarsus (5∶8), hind basitarsus slightly longer than following 3 tarsomeres together; distance between basal 2 pulvilli in foretarsus shorter than length of 2nd pulvillus; claw without basal lobe, inner tooth shorter than and lateral to apical tooth, apical tooth broad, abruptly tapering toward end (Fig. 3). Posterior margin of 7th sternite straight laterally; ovipositor almost as long as fore tibia; sheath hardly shorter than twice length of basal plate, apex

round in lateral view (Fig. 4), sheath in dorsal view very narrow, setae long and curved. Lancet with 20-21 serrulae, serrulae strongly elevated, oblique, 7th and 8th serrulae each clearly longer than distance between them, with 13-14 distal subbasal teeth, annular spines very sparse and short; naked area in lateral side of lancet narrow and high (Fig. 5).

♂. Body length 9-10 mm (Fig. 7). Body colour and structure similar to female except for each trochanter with a small black spot; a black stripe on dorsal side of each leg complete; subgenital plate broader than long, apical margin round; harpe as in Fig. 6; penis valve as in Fig. 8.

Etymology. "latidentella" refers to the broad apical dents of claw.

Holotype ♀, Jiwozi, Changanqu, Shaanxi Province (33°49′N, 108°49′E; alt. 2 077 m), 28 June 2008, JIANG Xiao-Yu. Paratypes: 1♀, 3♂♂, Jiwozi, Changanqu, Shaanxi Province (33°49′N, 108°49′E; alt. 2077m), 28 June 2008, JIANG Xiao-Yu, ZHANG Shao-Bing; 4♀♀, 3♂♂, Jiwozi, Changanqu, Shaanxi Province (33°51′N, 108°49′E; alt. 1 765 m), 27 June 2008, ZHANG Shao-Bing, JIANG Xiao-Yu; 1♀, Qingfengxia, Taibaixian, Shaanxi Province (34°02′N, 109°26′E; alt. 1 473 m), 3 July 2008, JIANG Xiao-Yu; 47♀♀, 9♂♂, Jialingjiang, Shaanxi Province (34°13′N, 106°59′E; alt. 1 617 m), 14 July 2007, ZHU Xun, JIANG Xiao-Yu; 1♀, Taopinglinchang, Lixian, Gansu Province, 27 June 2007, XIN Heng; 3♀♀, 2♂♂, Mt. Woniu, Xiaolongshan, Gansu Province (34°29′N, 104°47′E; alt. 2 200-2 250 m), 2 July 2009, XIN Heng, FAN Hun, PEI Jun-Li, MA Hai-Yan, WU Xing-Yu; 14♀♀, 16♂♂, Dalongtan, Shennongjia, Hubei Province (31°29′N, 110°18′E; alt. 2 110 m), 1 July 2009, ZHAO Fu, JIAO Zhao; 3♀♀, 5♂♂, Houzishi, Shennongjia, Hubei Province (31°27′N, 110°11′E; alt. 2 604 m), 28 July 2009, ZHAO Fu, JIAO Zhao; 15♀♀, 12♂♂, Jinhouling, Shennongjia, Hubei Province (31°28′N, 110°18′E; alt. 2 212 m), 8 July 2008, ZHAO Fu; 12♀♀, 7♂♂, Dalongtan, Shennongjia, Hubei Province (31°29′N, 110°18′E; alt. 2 114 m), 9 July 2008, ZHAO Fu; 8♀♀, 8♂♂, Shennongxi, Shennongjia, Hubei Province (31°28′N, 110°18′E; alt. 2 233 m), 10 July 2008, ZHAO Fu; 7♀♀, 2♂♂, Yazikou, Shennongjia, Hubei Province (31°31′N, 110°20′E; alt. 1 241 m), 19 July 2008, ZHAO Fu; 8♀♀, 2♂♂, Yinyuhe, Shennongjia, Hubei Province (31°29′N, 110°18′E; alt. 2 046 m), 29 July 2008, ZHAO Fu; 29♀♀, 22♂♂, Dalongtan, Shennongjia, Hubei Province (31°29′N, 110°16′E; alt. 2 312 m), 30 July 2008-1 Aug. 2008, ZHAO Fu; 2♀♀, 15♂♂, Yazikou, Shennongjia, Hubei Province (31°31′N, 110°20′E; alt. 1 787 m), 2-3 Aug. 2008, ZHAO Fu; 1♀, 2♂♂, Xiaolongtan, Shennongjia, Hubei Province, alt. 2 100 m, 26 June 2002, ZHONG Yi-Hai; 3♀♀, 4♂♂, Jinhouling, Shennongjia, Hubei Province, alt. 2 500 m, 28 June 2002, ZHONG Yi-Hai; 3♀♀, Banbiyan, Shennongjia, Hubei Province, alt. 2 500 m, 29 June 2002, ZHONG Yi-Hai; 10♀♀, 5♂♂, Xiaolongtan, Shennongjia, Hubei Province (31°15′N, 119°56′E; alt. 1 800 m), 4 July 2007, WEI Mei-Cai, XIAO Wei, NIU Geng-Yun, ZHONG Yi-Hai, NIE Mei; 46♀♀, 15♂♂, Honghuaduo, Shennongjia, Hubei Province (31°15′N, 119°56′E; alt. 1 200 m), 3 July 2007, WEI Mei-Cai, XIAO Wei, NIU Geng-Yun, ZHONG Yi-Hai, NIE Mei; 52♀♀, 52♂♂, Shennongjia, Hubei Province, alt. 2 100 m, 20-21 July 2003, JIANG Ji-Gang, ZHOU Hu; 19♀♀, 10♂♂, Shennongjia, Hubei Province, alt. 2 800 m, 22 July 2003, JIANG Ji-Gang, ZHOU Hu; 1♂, Shennongjia, Hubei Province, alt. 2 200 m, 23 July 2003, JIANG Ji-Gang; 39♀♀, 31♂♂, Shennongjia, Hubei Province, alt. 1 950 m, 24 July 2003, JIANG Ji-Gang, ZHOU Hu.

Distribution: China (Gansu, Shaanxi, Hubei).

Remarks: This new species is a member of *Tenthredo subflava* group and is similar to *Tenthredo bilineacornis* Wei, 1998. *T. latidentella* differs from *T. bilineacornis* as follows: scape of antenna black, the abdominal tergites without any black spot; clypeus broadly and shallowly emarginated; distance between the basal 2 pulvilli in fore tarsus shorter than length of 2nd pulvillus; the postocellar area without lateral black stripe; the 7th and 8th serrulae of female lancet each clearly longer than distance between them and with 13-14 distal subbasal teeth; the apical corner of harpe narrow and round, distinctly protruding; penis valve hardly broadened toward apex. (In *T. bilineacornis*, scape of antenna green with a dorsal black spot; the abdominal tergites 2-7 usually each with a pair of black spots; clypeus narrowly emarginated with the bottom truncate; the distance between the basal 2 pulvilli in fore tarsus longer than length of 2nd pulvillus; the postocellar area with lateral black stripes; the 7th and 8th serrulae of female lancet each clearly shorter than distance between them and with 8-9 distal subbasal teeth; the apical corner of harpe broad and round, hardly protruding; and penis valve strongly broadened toward apex.

Tenthredo flatoscutellania **Wei et Niu, sp. nov.** (Figs. 9-13)

♀. Body length 12 mm (Fig. 9). Yellow brown (green in life), apex of mandible dark reddish; following parts black: a short transverse stripe on posterior part of ocellar area; scape and flagellum

Figs 9-13. *Tenthredo flatosatellania* Wei *et* Niu, sp. nov. 9. Adult female, dorsal view. 10. Female head, dorsal view. 11. Hind claw of female. 12. Apical segments of abdomen and ovipositor of female, lateral view. 13. The 8th serrula of female lancet

entirely; most part of third antennomere; anterior corner of pronotum, a small transverse spot on anterior margin of prescutum, a triangular spot on top of scutum, lateral side of parapsis; a central spot on meso-postnotum; 3rd to 9th antennomeres dark green. Legs greenish yellow, basal macula on posterior side of hind coxa; a narrow dorsal stripe on apical 2/3 of each femur and on entirely length of each tibia and tarsus black. Wings hyaline; stigma, vein C and Sc greenish yellow, other veins dark brown. Body hairs and setae on sheath silver brown.

Body strongly shining; labrum shallowly and very

weakly punctured and microsculptured; malar space finely and densely sculptured; prescutum and scutum with some shallow punctures, without microsculpture; abdominal tergites finely microsculptured.

Labrum transverse, broader than long, apical margin obtusely round; clypeus broad and flat, broadly and roundly emarginated to a depth about 1/4 length of clypeus, apex of lateral lobe round; malar space about 1.5 times diameter of an ocellus; eyes large, with distance between them below shorter than height of an eye; supraantennal tubercles distinctly elevated but evenly merging to frontal walls; middle fovea open to frontal basin; middle ocellar furrow and postocellar furrow sharp; postocellar area flat, broader than long as 9∶7; lateral furrows deep, slightly curved, distinctly divergent backwards; head behind eyes in dorsal view shorter than eyes as 4∶5; lateral margins weakly narrowed; occipital carina complete, posterior margin of postocellar area sharply carinate. Antenna filiform, shorter than abdomen, slightly longer than head and thorax together; pedicellum hardly 2 times as long as broad, 3rd antennomere distinctly longer than 4th antennomere (4∶3), penult antennomere more than 2 times as long as broad. Mesoscutellum hardly elevated, quite flat, without peak or carina; mesepisternum flat; mesosternal thorn absent. Vein cu-a in forewing joining cell 1M at basal 1/3, vein a at basal 2/5 of anal cell, 2r meeting cell 2Rs at middle, cell 2Rs longer than 1Rs, vein 2r-rm 2.3 times as long as 1r-rm, hind anal cell sessile. Inner tibial spur of hind leg longer than half length of hind basitarsus (5∶8), hind basitarsus as long as following 3 tarsomeres together; distance between basal 2 pulvilli in fore tarsus as long as length of 2nd pulvillus; claw without basal lobe, inner tooth shorter than and lateral to apical tooth, apical tooth broad, strongly tapering toward end (Fig. 11). Posterior margin of 7th sternite straight laterally; ovipositor distinctly longer than fore tibia (5∶4), sheath hardly longer than basal plate, apex round in lateral view (Fig. 12), sheath in dorsal view very narrow, setae long and curved. Lancet with 21 serrulae, serrulae strongly elevated, oblique, 7th and 8th serrulae each clearly longer than distance between them, with 11-12 distal subbasal teeth, annular spines very sparse and short; naked area in lateral side of lancet narrow and high (Fig. 13).

♂. Unknown.

Etymology. The species is named after its very flat mesoscutellum.

Holotype ♀, Rizegou, Jiuzhaigou, Sichuan Province, 3-4 Aug. 2002, SHI Fu-Ming.

Distribution. China (Sichuan).

Remarks. *T. flatoscutellania* is a member of *T. subflava* group and is similar to *T. bilineacornis* Wei, 1998. *T. flatoscutellania* differs from *T. bilineacornis* in the black spot in head very small and only covered postocellar area, the postocellar area entirely green; the black macula on mesonotum very small; abdominal tergites entirely green; scape of antenna entirely black; the 7th and 8th serrulae of female lancet each as long as the distance between them and with 11-12 distal subbasal teeth (In *T. bilineacornis* the black spot in head covering entire ocellar area and most parts of postocellar area, the posterior margin and lateral sides of postocellar area black; scape green with small black spot; mesonotum with large black spot; the abdominal tergites 2-7 usually with a pair of black spots; the distance between the basal 2 pulvilli in foretarsus longer than length of 2nd pulvillus; the 7th and 8th serrulae of female lancet each clearly shorter than distance between them and with 8-9 distal subbasal teeth. See following key for the differences between the new species and other species of the species group.

Key to species of Tenthredo subflava group.

1. Hind anal cell sessile; mesepisternum flat, hardly elevated; head dorsally without "H" type black spot; mesoscutellum weakly elevated, almost flat; annular spines fine and sparse; naked area separated by annular spine bands; serrulae distinctly elevated with many minute subbasal teeth; setae on sheath long and curved. *nigroscalaris* subgroup ····· 2
   Hind anal cell distinctly petiolate; mesepisternum with a sharp middle tubercles; head with a "H" type black macula; mesonotum with 3 black spots; mesoscutellum distinctly elevated, with a distinct but roundish peak; lateral spines on lancet thick, short and dense; ventral 1/3 of lancet naked entirely; serrulae almost flat and straight with a few larger subbasal teeth; setae on sheath very short and straight. *subflava* subgroup ····· 6
2. Antenna black, legs in male with narrow black stripe, body otherwise without black; clypeus shallowly and broadly incised; postocellar area subquadrate. Sikkim ····· T. casta **Konow, 1908**
   Postocellar area and mesonotum with distinct black maculae; each femur in female partly black ····· 3
3. Scape in female green with an obscure black spot dorsally; scape in male entirely green; posterior margin and lateral furrows of postocellar area black; abdominal tergites 2-7 in female usually with a pair of black spots; 7th and 8th serrulae of female lancet each clearly shorter than distance between them and with 8-9 distal subbasal teeth. Henan, Shaanxi, Hubei ····· T. bilineacornis **Wei, 1998**
   Posterior half of postocellar area and lateral furrows green; abdominal tergites with different macula; scape black; 7th and 8th serrulae of female lancet each not shorter than distance between them and with more than 10 distal subbasal teeth ····· 4
4. Hind tibia and tarsus entirely black; each of abdominal tergites with a basal black band; clypeus deeply incised. Sichuan, Myanmar ····· T. nigroscalaris **Malaise, 1945**
   Hind tibia green with a narrow black stripe; clypeus shallowly incised; abdominal tergites green without black macula ····· 5
5. Postocellar area green entirely; prescutum with a small transverse black spot; 7th and 8th serrulae of female lancet each as long as distance between them. Sichuan ····· T. flatoscutellania **Wei et Niu, sp. nov.**
   Anterior 2/3 of postocellar area black; prescutum with a large and bifurcate black spot; 7th and 8th serrulae of female lancet each clearly longer than distance between them. Gansu, Shaanxi, Hubei ····· T. latidentella **Wei et Zhao, sp. nov.**
6. Supraantennal tubercles distinctly elevated and divergent backwards, distinctly cut off from frontal walls ····· 7

Supraantennal tubercles very low, slightly divergent backwards and evenly merging to frontal walls 8

7. Postocellar area feebly broader than long as 1.2∶1.0; basal 1/3 of each abdominal tergite black. Zhejiang, Guizhou ..... T. longitudicarina **Wei, 2006**

Postocellar area much broader than long as 1.6∶1.0; basal 1/4 or less of each abdominal tergite black. Shaanxi, Henan, Sichuan ..... T. tenuismania **Wei, 1998**

8 Black spots on head and thorax broad; apex of sheath round; mesoscutellum weakly elevated with a round peak; scape black with a small green spot on outside. Henan; Myanmar ..... T. subflava **Malaise, 1945**

Black spots on head and thorax narrow; mesothorax almost entirely green; apex of sheath very narrow, acute; mesoscutellum strongly elevated with a prominent peak; scape green with a small black spot on inner side. Henan ..... T. mossafila **Wei, 2002**

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中国叶蜂属 (膜翅目, 叶蜂科) 二新种

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摘 要 记述中国叶蜂科叶蜂属 *Tenthredo subflava* 种团 2 新种: 宽齿平绿叶蜂 *T. latidentella* Wei *et* Zhao, sp. nov. 和双斑平绿叶蜂 *T. flatosutellania* Wei *et* Niu, sp. nov.。编制了 *T. subflava* 种团分种检索表。新种模式标本保存于湖南长沙中南林业科技大学昆虫模式标本室。

关键词 膜翅目, 叶蜂科, 叶蜂属, 新种, 中国.

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